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ASSESSMENT OF THE PROBLEMS OF MORTGAGE FINANCE IN THE 1980's AND POTENTIAL C.M.H.C. POLICY INITIATIVES/RESEARCH DIRECTIONS

by

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EXECUTIVE SUMMARY

1. The three major problems associated with mortgage finance are:
   (1) uncertainty regarding the future path of nominal interest rates;
   (2) high real interest rates (presumably, due to inflation risk premium);
   (3) tilting of real payments stream under equal-payments mortgages.

2. Mortgage interest rate insurance, which would address the problem posed by uncertainty regarding the future path of nominal interest rates, would appear to be an attractive short-run policy initiative.

   2.1 Pesando-Turnbull have proposed a "simple solution", which keys on the issuance of marketable debt which is extenable at the option of the C.M.H.C. (See Appendix A to this Assessment.)

   2.2 If (1) insurance premiums are to be market-determined and (2) the C.M.H.C. is not to be exposed to significant underwriting risk, then the Pesando-Turnbull "simple solution" is the only viable way to structure this initiative.

2.3 In principle, private lenders could also provide mortgage rate insurance, in the manner suggested by Pesando-Turnbull. If so, the role of the C.M.H.C. would primarily be that of a catalyst, with the C.M.H.C. bearing the start-up costs associated with this innovation.

2.4 If so desired, a known and limited subsidy could be provided by the C.M.H.C. to mortgage rate insurance designed along the lines of Pesando-Turnbull.

3. Recommendation: The C.M.H.C. initiate a program of mortgage rate insurance, along the lines proposed by Pesando-Turnbull.

3.1 Before introducing this initiative, the C.M.H.C. would have to address the following research issues:

(1) the usefulness of interest rates on extendable/callable bonds versus straight bonds as a source of information regarding the pricing of premiums for mortgage rate insurance;

(2) "instrument risk", focusing on the correlation - and stability of correlation - between the interest rates on mortgages and bonds. (This is the key to assessing the residual risk borne by the C.M.H.C. if it insures mortgages but issues extendable bonds.);

(3) the moral hazard and related problems arising from the fact that mortgage rate insurance, in effect, creates perfectly inelastic demand for mortgage credit by insured borrowers; and

(4) the link between the "deductible" and the term-to-maturity of the mortgage, for a given insurance premium.

3.2 If the primary concern of the C.M.H.C. is that there may be no demand for insurance at its market-determined price, and if precise signals regarding market price cannot be extracted from the price behaviour of existing extendable/callable bonds, then the C.M.H.C. may wish to enter into discussion with the Department of Finance to issue some trial extendable bonds.

3.3 This initiative does not address the problem posed by high real interest rates. Indeed, the market-determined insurance premium together with high real interest rates may signal the attractiveness of a more comprehensive initiative - the indexed mortgage.

4. The indexed mortgage has the potential to address all of the current problems. Only the indexed mortgage can address the problem of high real interest rates, under the consensus view that these historically high real rates are due to inflation uncertainty.

4.1 The major obstacles to the introduction of indexed mortgages are (1) the large start-up costs and (2) the fact that the potential demand by borrowers for this type of mortgage has not (as yet) been firmly established.

4.2 Other agencies (for example: the Lortie Commission, the Economic Council of Canada) have endorsed the concept of an indexed mortgage. Prior research commissioned by the C.M.H.C., as well as work commissioned by the Lortie Commission, indicate that only partial capitalization of the inflation adjustments (among other design features) is necessary to keep default risk beneath a target level.

5. Recommendation: The C.M.H.C. study, as an important part of its research agenda, the viability of the indexed mortgage. If the analysis is favourable, the C.M.H.C. could encourage their introduction by offering to insure indexed mortgages which meet certain design criteria. Alternatively, the C.M.H.C. could take a more direct role by issuing indexed financial instruments and using the proceeds to make indexed mortgage loans. In effect, the C.M.H.C. would act as a traditional financial intermediary, with the key exception that both its assets and liability would represent an important financial innovation. This more active initiative fits well with the Government of Canada's announced commitment to the reform of the private pension system, and might be deemed to be attractive on this account.

5.1 Research should first establish whether or not, and on what conditions, there exists potential demand by (perhaps re-educated) borrowers for indexed mortgages.

5.2 Research should follow up on earlier work related to the design question, including the issue of default risk.

5.3 Research should focus on the mechanics of encouraging the introduction of indexed mortgages, either through the passive route of the C.M.H.C.'s agreeing to insure them or through the active route of the C.M.H.C.'s extending indexed mortgage loans.

5.4 If the decision on whether or not to promote indexed mortgages is favourable, then some interface with those involved with the pension reform agenda would appear to be appropriate.

6. The problems of moral hazard, adverse selection (especially) and its inherent nondiversifiability strongly suggest that the C.M.H.C. not pursue the possibility of providing insurance to guarantee that mortgage payments will be made in the event that the mortgage borrower becomes unemployed.

7. Prior research commissioned by the C.M.H.C. has highlighted, using the Royal Trust data, the diversity of price movements across local housing markets. Individual homes represent quite risky assets, while this is less so for a well-diversified portfolio of homes. This fact suggests an alternative rationale for the shared appreciation mortgage (SAM); that is, the SAM may improve the efficiency of risk bearing in the residential housing market. The SAM may warrant closer study on this account.

8. Any initiative which involves the C.M.H.C.'s assuming the role of a financial intermediary could be justified only if (1) there is a significant innovation associated with the types of mortgage loans

to be made and (2) the C.M.H.C., like any prudent intermediary, is able to match its assets and liabilities so as to eliminate risk.

8.1 As noted, the C.M.H.C.'s issuing indexed liabilities and using the proceeds to make indexed mortgage loans satisfies these criteria.

8.2 Alternative initiatives, such as issuing callable debt and using the proceeds to grant (say) 10-year mortgage loans whose terms can be renegotiated after 5 years at the borrower's option, are less clear. The possible exception is if the C.M.H.C. intends to provide an explicit or implicit subsidy to the mortgage loans, in which case the attractiveness of delivering the subsidy in this or some alternative form would merit study.

9. The C.M.H.C. should not attach undue importance to the possible policy objective of ensuring that an active market for (say) traditional, 5-year mortgages always exists. Risk preferences and expectations combined to significantly reduce the importance of this market during recent interest rate peaks. This result, which has its parallel in the virtual disappearance of the private market for intermediate- and long-term bonds, should be viewed as a market signal rather than as a market failure. Alternatively, it may be viewed as a sign of the possible social gain of the C.M.H.C.'s bearing the start-up costs associated with financial innovation, such as indexed mortgages.

10. To the extent that the C.M.H.C. has identified uncertainty as to the future path of nominal interest rates as the problem in need of the most immediate attention, there are alternative initiatives that are possible. These include the promotion of an "average interest rate mortgage", or AIRM. Instead of taking out a $100,000 mortgage for 5 years, the borrower would take out a $20,000 1-year mortgage at the 1-year rate, a $20,000 2-year mortgage at the 2-year rate, and so on. The result would be to smooth the impact of volatile interest rates on the required stream of mortgage payments. A second initiative would be to require that prepayment privileges be made more generous, so that a borrower could not be locked in to a 5-year mortgage if rates were to fall. Both of these initiatives would appear to be inferior to mortgage rate insurance.

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I. MORTGAGE FINANCING IN THE 1980's: PROBLEMS POSED BY "DISINFLATION" ENVIRONMENT

1. Major Problems

1.1 Uncertainty regarding future path of nominal interest rates

In spite of the recent declines in the inflation rates in North America, there exists substantially uncertainty - and in some instances, skepticism - regarding the possibility that governments may respond to the current recession by overexpansionary monetary and fiscal policies. As a consequence, there exists substantial uncertainty regarding the future path of inflation and thus of nominal interest rates. This point has not been lost by mortgage borrowers, and is reflected in the increased demand for 3 to 5 year mortgages in order to "lock in" present rates.

1.2 High real mortgage rates

At present, the interest rate on 5-year conventional mortgages is 13.5%. Inflation had stabilized at around 6% for the past six months or so, but has now dropped further. Even the 7½% spread between the 5-year mortgage rate and the 6% inflation rate is an historical high. This spread is symptomatic of the fact that (expected) real interest rates are very high by historical standards. This is presumably due to the large amount of uncertainty regarding the future path of inflation, together with the negative (before tax) ex post real rates of return earned by lenders during most of the past decade. The implication is that although mortgage borrowers may be protecting themselves (in part)

against the possibility of subsequent increases in nominal rates by taking out longer-term mortgages, the expected real cost of these mortgages is very high.

1.3 (Continued) tilting of real payments streams under equal-payment mortgages

Although nominal mortgage rates have fallen dramatically from the levels reached in 1981-1982, they remain far above those that would prevail in a non-inflationary environment. The tilting problem associated with equal-payment mortgages, although abated, still persists.

2. Policy initiatives/instruments

2.1 Mortgage interest rate insurance

The uncertainty regarding the future path of nominal interest rates, in conjunction with both the level and volatility of mortgage rates in recent years, suggests that mortgage borrowers would be willing to pay for insurance which would limit any increase in their present mortgage rates upon mortgage renewal (or takedown of a mortgage commitment). If such insurance were available, there might be an affective increase in the demand for owner-occupies housing, as well as welfare-enhancing reduction in the degree of uncertainty facing present owners. A parallel argument would hold for the builders and owners of (especially) non-controlled rental apartments.

2.2 Design of mortgage instrument, via C.M.H.C. willingness to insure

To the extent that uncertainty about the future course of inflation is the prime cause of the historically high level of real interest rates, then only an indexed mortgage - which fixes the real rate of interest at the date that the mortgage is taken out - has the potential to reduce the real cost of mortgage finance. There are, of course, many ways in which an indexed mortgage could be designed. In particular, there is no requirement that the inflation adjustments be added to the principal, or that these inflation adjustments be "100% capitalized".

In addition, there exist the well-known list of "deferred interest" mortgages - GPM's, PLAM's, SAM's - which could alleviate the tilt problem. Recent research and market developments suggest that if it unlikely that mortgage borrowers want - or lenders are willing to provide - a mortgage whose expected stream of real payments remains flat. On the other hand, there is still no reason to believe that the downward and uncertain tilt in the real payments stream of an equal-payment mortgage is the preferred market solution.

2.3 Direct role of C.M.H.C. as a financial intermediary

The C.M.H.C. could raise funds by issuing an innovative type of financial instrument, and then use the proceeds to make direct loans in the form of a parallel mortgage instrument. An obvious case would be if the C.M.H.C. were to issue indexed bonds and use the proceeds to make indexed mortgage loans. There would appear to be two criteria that any such initiative must satisfy. First, the mortgage instrument must be innovative, so the C.M.H.C. does not simply duplicate the role of

private intermediaries. Secondly, like any prudent intermediary, the C.M.H.C. must be able to eliminate risk to itself by an appropriate matching of assets and liabilities.

II. LESSONS REGARDING CONSUMER PREFERENCES FROM RECENT DEVELOPMENTS IN THE MORTGAGE MARKET

1. Risk-return dimension

Although expectations and measures of uncertainty are not directly observable, it would appear that mortgage borrowers are responsive to perceived changes in the risk-return characteristics of alternative mortgage contracts. When interest rates were at their peak levels in 1981-1982, mortgage borrowers opted in large numbers for short-term or variable rate mortgages. This behavior is consistent with a view that borrowers expected that these extraordinary rates would prove to be temporary, and hence that borrowing at short-term would prove to be less expense than borrowing at long-term. At present, the demand for longer-term mortgages - in spite of their higher cost - appears to be motivated by the desire to avoid the risks associated with a possible rise in mortgage rates in the years ahead.

2. Tilting dimension

Even with nominal mortgage rates reached their peak levels in 1981-1982, there was no strong trend (at least in the owner-occupied market)

toward mortgage designs which sought to ameliorate the tilting problem. If one were convinced that the latter is the informed market response, the implication would be that initiatives by the C.M.H.C. designed to address this problem would not mirror the apparent preferences of mortgage borrowers or lenders or both.

III. MORTGAGE INTEREST RATE INSURANCE

1. Feasibility (Pesando-Turnbull Proposal)

The C.M.H.C. may wish to provide insurance to a mortgage borrower such that the borrower could insure that the mortgage rate, upon renewal (or takedown of a commitment), does not exceed the initial mortgage rate plus x percent. The x percent is equivalent to a "deductible", and raising x would serve to reduce the insurance premium.

Initial attempts to explore the feasibility of this initiative focused on the attempt to price the insurance using option theory, and to identify the "hedge ratio" which is the logical implication of the pricing model and which would eliminate the underwriting risk to the C.M.H.C. By and large, these attempts were unsuccessful, other than to underscore the fact that complicated transactions in the options/futures market for U.S. interest rates and the Canadian dollar would not enable the C.M.H.C. to shed fully its underwriting risk. In retrospect, the earlier investigators might have realized earlier that the inability to construct the necessary risk-free portfolio vitiated the pricing formula as well as exposing the C.M.H.C. to significant underwriting risk.

Pesando-Turnbull have proposed a simple solution to the problem of providing mortgage rate insurance. The key is the recognition that to fully hedge its position, the C.M.H.C. must purchase the identical put option that it sells when it provides the mortgage rate insurance. To do so, the C.M.H.C. must issue bonds that are extendable at the C.M.H.C.'s option, at the initial rate plus x percent. The difference between the interest rate on the extendable bonds and otherwise identical non-extendable bonds is the market-determined price of the put option, and thus of the insurance premium. The proceeds of the sale of the extendable bonds, together with the insurance premiums, are invested by the C.M.H.C. in otherwise identical non-extendable bonds. The C.M.H.C. bears no underwriting risk (except for "instrument risk", as discussed later) and the insurance premium has a clear, market-determined price. Details of the Pesando-Turnbull proposal, together with an example, are contained in Appendix A.

The following additional points merit note:

(1) If the C.M.H.C. is to provide mortgage rate insurance, subject to the constraint that the C.M.H.C. bear no underwriting risk and that insurance premiums be set at a market-determined level, then the Pesando-Turnbull proposal is the only way of delivering this insurance.

(2) Should the C.M.H.C. decide to subsidize its mortgage rate insurance, it could do so in a straightforward manner and without exposing itself to unknown underwriting risk. If the spread between the interest rates on the extendable and non-extendable bonds is (say)

1%, the C.M.H.C. might elect to sell the insurance at ¼% of insured principle per annum. The explicit subsidy, which would presumably require a limit on the amount of the insurable mortgage, would be both limited and known in advance.

(3) If there is a potentially large demand for mortgage rate insurance, then why have private lending institutions not innovated in the indicated manner and thus provided risk-free (to them) mortgage rate insurance? There is no completely satisfactory answer to this question, especially since a mortgage-lending institution could simply issue extendable bonds or deposits and thus pass interest rate risk on to a third party. If the Pesando-Turnbull proposal were understood by private lending institutions, and if there were an effective demand for this insurance at the market-determined price, then the role of the C.M.H.C. would be solely that of a catalyst. On the other hand, to the extent that there are economies of scale in the provision of this insurance, together with the possibility that the C.M.H.C. could co-ordinate its lending needs with the placement of Government of Canada obligations by the Department of Finance, the C.M.H.C. might well be better suited to providing this insurance.

2. What mortgage rate insurance will and will not accomplish

Mortgage rate insurance enables the borrow to shed the risk that nominal mortgage rates may be substantially higher at the date of renewal (or takedown of a commitment). Mortgage rate insurance does not address the problem posed by the historically high level of real interest rates.

If an individual takes out a 5-year mortgage and also purchases mortgage rate insurance, the net result might be to highlight the costs imposed on the mortgage borrower by the present uncertainty regarding the future path of inflation and thus of nominal interest rates. Mortgage rate insurance does not, of course, address the tilting problem associated with the equal-payment mortgage in today's (still) inflationary environment.

3. Research issues

The major issues which merit additional research in the context of the Pesando-Turnbull Proposal are as follows.

3.1 Issues pertinent to cash flow management

Because the demand for mortgage rate insurance will be more or less continuous, while bonds are likely to be issued only at discrete intervals, there will be less than perfect matching of cash flows. This is not likely to present a major problem, but the issue merits attention.

3.2 Analysis of problems arising from the existence of prepayment privileges

If mortgages eligible for insurance have prepayment privileges, then the actual mortgage principal at the date that the mortgage is renewed may depart from its book (and insured) value. When prepayments are made, the book (and insured) value of the mortgage decline. A more detailed analysis of this problem, drawing upon existing knowledge of prepayments and their responsiveness to interest rate movements, merits attention.

3.3 Design of the insurance, including "deductibles" and the range of terms-to-maturity of mortgages eligible for insurance

In order to limit the size of the isnurance premiums, it is probably necessary to build in a "deductible" such that the mortgage borrower is only insured against increases in the mortgage rate in excess of x percent. Clearly, a major input into the size of the "deductible" is the possible objective of keeping insurance premiums beneath some target level (such as ¼% per year for each dollar of insured principal). A second input is the link between the "deductible" and a (possible) auxiliary objective of seeking to prevent, upon renewal, the ratio of carrying costs to the borrower's income from rising above its initial level. To the extent that this auxiliary objective is factored into the range of possible "deductibles" to be offered to borrowers seeking insurance, it links the "deductible" to the rate of inflation expected at the time the insurance is taken out.

The second major design issue pertains to the terms-to-maturity of the mortgages to be eligible for mortgage rate insurance. The greater is the number of terms, the greater is the flexibility provided the mortgage borrowers. On the other hand, the greater is the number of different extendable bonds that must be issued by the C.M.H.C. This tradeoff merits explicit study.

3.4 Analysis of pricing and market response to extendable (and callable) bonds in the Canadian capital market

Extendable bonds already exist in the Canadian capital market, although the option to extend typically belongs to the lender. This fact implies that market participants have already priced this put option, and it

should be instructive to study the pricing of extendable relative to non-extendable bonds. If a large enough number of extendable bonds can be identified, it would be very useful to "pair" each with a comparable non-extendable bond and track the interest spread over time. One would hope to gain quantitative insights into how the market is likely to price the put option (and hence the insurance premium), and how this price might vary over time. It would also be useful to draw upon the knowledge of underwriters in the financial community, as well as experts in the Department of Finance and the Bank of Canada.

Most (if not all) extendable bonds that presently exist are extendable at the option of the lender, not the borrower (issuer). There exists the concern that the valuation of the put option may not be symmetric, in that it is considered more valuable if held by the borrower than if held by the lender. If so, information obtained from the monitoring of existing extendable bonds may be of questionable value. To address this concern, one would want to exploit the fact that a 10-year bond retractable to 5 years at the borrower's option is very much like a 5-year bond which is extendable to 10 years at the borrower's option. The importance of this observation is that 10-year bonds retractable to 5-years are quite common in the Canadian capital market, and here the option is held by the borrower. This fact suggests that an analysis of bonds with call provisions may be a useful adjunct (or integral part) of any attempt to extract signals from the capital market regarding the likely size of insurance premiums.

2.5 The correlation of movements in the interest rates on bonds and mortgages

If the C.M.H.C. provides mortgage rate insurance and issues extendable bonds, then the C.M.H.C. will bear "instrument risk" in the form of possible divergent movement in these two rates. Since mortgages provide different cash flows, have different default risk, and typically have prepayment options, there is no reason to expect that movements in mortgage and bond rates will always be perfectly correlated. This empirical question, and the design issues that it raises, merit explicit attention.

During the interest rate peak in the Fall of 1981, for example, the spread between the 5-year conventional mortgage rate and the rate on 3-5 year Government of Canada bonds rose from an average of about 150 basis points to about 350 basis points. (There exists a separate question of how "representative" the 5-year mortgage rates really were, given the lack of transactions at these rates, but this is a separate issue.) In large part, this may reflect the increased value of the prepayment option due to (1) the increased uncertainty regarding the future path of interest rates and (2) the expectation that interest rates were at or near a peak, which would suggest the likelihood that rates would fall and prepayment options would be exercised. This increased spread may also reflect a cyclical increase in default risk, and a corresponding increase in the risk premium embedded in the conventional mortgage rate. Regardless of its cause, however, this episode identifies the potential importance of "instrument risk" and this highlights an issue which must be addressed. Possible solutions include, for example, the tightening

up of prepayment privileges on mortgages if they are to be eligible for mortgage rate insurance. This would reduce fluctuations in the bond-mortgage rate attributable to fluctuations in the value of this option. (Indeed, this appears to be a current trend among mortgage lenders, who perhaps realize that they have mispriced this option in the past.) In addition, if only mortgages insured against default risk are deemed to be eligible for mortgage rate insurance, fluctuations in the bond-mortgage spread due to cyclical changes in default risk of the mortgages would be reduced.

3.6 The "moral hazard" problem associated with the creation of a perfectly inelastic demand for mortgage funds

A borrower whose mortgage renewal is at a rate above the "deductible" is theoretically indifferent to the interest rate charged at the date of renewal. He bears only the cost of the "deductible", and is unaffected by mortgage rates in excess of this amount. As with any such insurance scheme, this issue must be addressed. A simple solution, for example, would require that the borrower at the date of renewal obtain at least three quotes on the renewal mortgage rate. If competition prevails among mortgage lenders, then this may represent a satisfactory solution. Alternatively, the C.M.H.C. could specify at each date the (say) 5-year mortgage rate on which insurance claims would be paid, based (perhaps) on an average of the 5-year rates being quoted by major lenders.

There is, however, a more subtle issue. In the recent past, mortgage lenders effectively discouraged 5-year mortgages because of the high cost of obtaining 5-year deposits. In effect, mortgage lenders were not

willing to pay the very substantial risk premium necessary to entice individuals to deposit their funds for a full 5 years, in part because the lenders were not sure that there would exist demand for mortgage loans at the corresponding rates. With mortgage rate insurance, however, lenders could be confident that insured borrowers would be willing to pay - in effect - whatever interest rate was necessary to attract 5-year deposits. This type of problem may warrant more attention than it has received to date.

IV. INDEXED MORTGAGES AND THE PROBLEM OF HIGH REAL INTEREST RATES

1. Inflation uncertainty and high real interest rates

The consensus view of those who monitor North American capital markets is that real interest rates are presently at or near historically high levels, and that this is due to uncertainty regarding the future path of inflation. This uncertainty, in turn, is the byproduct of the political uncertainty regarding the extent to which governments will use expansionary fiscal/monetary policies to try to expedite the recovery from the current recession. There is no reason to believe that this inflation uncertainty will be quickly erased.

2. Indexed Mortgages

2.1 Concept

The crucial feature of an indexed mortgage is that the real interest rate is fixed over the term of the mortgage at the date that the mortgage is taken out. Because the real interest rate is known, there need be no risk premium to compensate the lender for the inflation uncertainty. In turn, this suggests that the real interest rate at which indexed mortgages could be issued would be substantially less than the expected real interest rate on a traditional mortgage.

2.2 Design

There are two key points. First, since the risk premium to compensate for inflation uncertainty is likely to be greater for 5-year than for (say) one-year mortgages, the reduction in the real rate on an indexed versus a traditional mortgage will be greater for the 5-year mortgage. This fact suggests that, to obtain maximum advantage of the potential for cost reduction inherent in the indexed mortgage, such mortgages should at least include the 5-year term, and should perhaps promote it.

Secondly, there is no requirement that all of the inflation adjustments be added to the principal (the 100% capitalization case). Indeed, work commissioned by the Lortie Commission and also by the C.M.H.C. (to Pesando-Turnbull) suggests that full capitalization is likely to lead to a mortgage instrument which has too great a default risk. This fact suggests that a reduced amortization period and/or a higher down-payment coupled with the partial capitalization (perhaps 25%) of the

inflation adjustments might be more suitable.

3. Role of the C.M.H.C. in promoting index mortgages

3.1 Passive role: C.M.H.C. agrees to insure indexed mortgages that meet specified design criteria

By agreeing to insure indexed mortgages which satisfy its design criteria, the C.M.H.C. could at least facilitate the introduction of this type of instrument. As noted by the Lortie Committee, however, there remain legal and other obstacles that must be overcome before this type of instrument is likely to be introduced. Before devoting its resources to this task, the C.M.H.C. must first be persuaded that (1) the risk premium embedded in real interest rates is not likely to disappear quickly and (2) the concept of an indexed mortgage will - in fact - be attractive to at least some mortgage borrowers. The Economic Council of Canada has sanctioned the indexed mortgage (perhaps without sufficient attention to the issues of default risk and partial capitalization), and their assessment of the response to their proposal may be useful on this account.

3.2 Active role: C.M.H.C. issues indexed bonds and uses proceeds to make indexed mortgage loans

Many of the initiatives being contemplated by the C.M.H.C. involve the C.M.H.C.'s issuing debt (such as the extendable debt under the Pesando-Turnbull proposal). If the C.M.H.C. could establish that a potential demand for indexed mortgages does exist, then a more direct initiative would merit consideration. The C.M.H.C. could issue indexed

bonds and use the proceeds to make indexed mortgage loans. In effect, the C.M.H.C. would serve the role of a traditional financial intermediary, but with one important exception. Both the assets and the liabilities of this new financial intermediary would represent new financial instruments. The rationale for the initiative would lie in the large start-up costs associated with the introduction of indexed financial instruments into the Canadian capital market. If successful, private intermediaries might emulate the C.M.H.C. initiative.

If the C.M.H.C. were to issue indexed bonds and use the proceeds to make indexed mortgage loans, then the C.M.H.C. would again be exposed to "instrument risk". This risk would have to be assessed. If deemed to be of consequence, this risk could require design features directed toward its reduction. For example, the C.M.H.C. might elect to issue a financial instrument that is more akin to an indexed mortgage than an indexed bond. A natural clientele for any indexed instruments issued by the C.M.H.C. would be pension funds or life companies with respect to their pension business. Indeed, because of the correspondence between annuities and mortgages, pension fund managers might prefer the C.M.H.C. to issue indexed instruments which more closely resemble mortgages than bonds. The possibility of linking this C.M.H.C. initiative with the pension reform agenda, to which the Government of Canada is committed, must be viewed as a potentially attractive side benefit.

4. The Role of Indexed Mortgages With and Without the Introduction of Mortgage Rate Insurance

If indexed mortgages were introduced and widely adopted, then there would be little need for mortgage rate insurance as previously described. Real rates on indexed mortgages are likely to be quite stable, and undoubtedly far more stable than nominal rates on traditional mortgages. If mortgage rate insurance were introduced, there remains the possiblity that many borrowers would still be attracted to an indexed mortgage as a means of reducing the expected real cost of mortgage finance. In general, there is no reason why these two initiatives could not co-exist.

The indexed mortgage has the potential to address all three of the problems identified in the introduction of this report (uncertainty about the future path of nominal rates, high real rates, the tilting question). The indexed mortgage has the disadvantage that it represents a more dramatic financial innovation, with an attendant increase in start-up costs. Further, and unlike mortgage rate insurance, there is as yet no strong signal that borrowers would be attracted to the indexed mortgage instrument.

5. Research Issues

5.1 Borrower response to the indexed mortgage

The first (and perhaps foremost) research issue is to determine the potential demand by mortgage borrowers for indexed mortgages. This task is made difficult by the lack of familiarity with the instrument, and it

may well be that only sophisticated borrowers (such as developers of rental or condominium projects) may be initially attracted to the concept. The production of a discussion paper for wide circulation and public response might be useful in assessing the potential market for indexed mortgages.

5.2 The real interest rate on indexed versus the expected real interest rate on traditional mortgages

In assessing the potential demand for indexed mortgages, this may turn out to be a crucial issue. It is not clear how much beyond a "seat-of-the-pants" estimate can be provided by a more formal economic analysis.

5.3 The design of the indexed mortgage

Previous work by the Dortie Commission, Pesando-Turnbull (for the C.M.H.C.) and others provides the basis for a first pass at what the C.M.H.C. may deem to be an insurable mortgage design.

5.4 The process through which indexed mortgages are likely to be introduced into the Canadian capital market

If life companies were to acquire indexed mortgages as assets, they would be in a position to issue indexed annuities as liabilities. The emerging concensus regarding pension reform has targeted inflation protection accorded private pension plans as a central issue. This fact suggests that life companies might be, among the major mortgage lenders, the most amenable to the introduction of indexed mortgages. If the indexed mortgages were held by life companies in segregated funds with respect to their pension business, tax complications might be minimal.

In general, this type of enquiry identifies a major item in the research agenda: exploring the possible ways in which indexed mortgages might be introduced by existing participants into Canada's financial system.

5.5 Legal and other potential obstacles

The Report of the Lortie Commission is the obvious point of departure. (See, especially, pages 61-67.)

V. "DEFERRED INTEREST" MORTGAGES AND THE TILTING PROBLEM

1. Is the "Non-solution" to the Tilting Problem a Rational or a Non-rational Response?

As noted, mortgage instruments designed to alleviate significantly the tilting problem did not emerge as a market solution during the interest rate peaks in 1981 and 1982. From the viewpoint of lenders, "deferred interest" mortgages such as the GPM may have substantially more default risk than casual analysis leads many observers to believe. In particular, as noted by Pesando-Turnbull, housing prices do not track the inflation rate so closely as is often suggested, and price behaviour differs sharply across local housing markets. From the viewpoint of lenders who are concerned with default risk, mortgages whose payments are designed to rise at the expected rate of inflation appear to be too risky. On the other hand, some degree of graduation would appear to be possible without materially increasing the risk of default.

From the viewpoint of borrowers, the fact that mortgage interest payments are not deductible may lessen demand for mortgages whose nominal payments rise over time. In addition, there are risks pertaining to the real income of the borrower. On the other hand, there exists as well the possiblity that borrowers do not fully understand either the impact of inflation or the nature of the tilting problem. In a world of no inflation, for example, would mortgage borrowers choose to structure the payments stream so that it declines over time? Auxiliary changes, such as the observed increase in loan-to-value ratios relative to those that prevailed in a less inflationary environment, have also served to lessen the need for a solution to the tilting problem per se.

In short, the tilting problem - especially now that nominal interest rates have declined - may be a less important problem than many analysts would have thought a few years ago. Nonetheless, it may represent a problem of sufficient importance to warrant an auxiliary - as opposed to a central - policy initiative.

2. Research Issues

2.1 Evaluation of the "non-solution"

A central question is whether there exists potential demand by mortgage borrowers for this type of innovation (in which case the non-solution may be attributable to the supply side of the market for mortgage funds). Again, an information gap may be part of the story.

2.2 Innovative ways to address the tilting problem

As noted by Pesando-Turnbull, the shared appreciation mortgage (SAM) has far less default risk than do other "deferred interest" mortgages. In effect, this hybrid instrument contains an element of risk sharing between the borrower and lender with respect to the price appreciation of the home. In general, this raises the question of whether there might be alternative risk-sharing arrangements which might be attractive to the borrower and/or lender. If the borrower's major concern is that his real income may decline sharply over time, it may be possible to design a mortgage contract which is contingent upon the path of the borrower's nominal income after the date that the mortgage contract is signed. The contingency could relate solely to the timing of payments (through, for example, changing the length of the amortization period) and/or the actual amount of the payments. Because of the issues of moral hazard, adverse selection and the probable non-diversifiability of risks posed by the uncertainty regarding a borrower's income stream, the latter may be a non-starter.

The analysis of price behavior in local housing markets conducted by Pesando-Turnbull provides a further perspective on the SAM. Pesando-Turnbull document, using the Royal Trust data, the diversity of price movements in individual housing markets. Since an individual owns (typically) a single home, he bears a great deal of risk that is potentially diversifiable if that home were held in a diversified portfolio. A lender who holds a large portfolio of SAM's, on the other hand, would be able to diversify away a substantial portion of the risks associated with price movements in local markets. From this persepctive, SAM's may well represent

an efficient means of risk-sharing and for this reason may warrant more detailed consideration.

VI. MISCELLANEOUS INITIATIVES (SEE EXECUTIVE SUMMARY)

VII. ALTERNATIVE INITIATIVES TO ADDRESS THE PROBLEM POSED BY THE UNCERTAINTY REGARDING THE FUTURE PATH OF NOMINAL INTEREST RATES

1. The "Average Interest Rate Mortgage" or AIRM

Professor Michael Brennan of the University of British Columbia has suggested the introduction of an AIRM as a solution to the problem posed by the volatility of mortgage rates. Instead of taking out (say) a 5-year mortgage for $100,000 at the 5-year rate, the borrower would take out a $20,000 mortgage at the 1-year rate, a $20,000 mortgage at the 2-year rate, and so on. The result would be to smooth the impact of fluctuations in the mortgage rate, and to ensure that the borrower did not inadvertently lock himself into a mortgage rate which turns out to be a temporary peak. In addition to promoting the AIRM through its educational role, the C.M.H.C. could publish, perhaps weekly, an index of 5-year mortgage rates. This would then be the rate at which maturing portions of the original mortgage, each of which would be extended for 5 years, would be automatically contracted.

This suggestion has some appeal, and it may be worthwhile for the C.M.H.C. at least to raise this issue with mortgage lenders. The AIRM would appear to have two major drawbacks relative to the mortgage rate insurance proposal. First, it does not protect borrowers from a general uptrend in mortgage rates. By contrast, a 5-year mortgage with a 5-year extension at or below a ceiling rate goes much further in this direction. Secondly, the mortgage rate insurance is attractive because of its insurance element. If borrowers are primarily concerned about protecting themselves against the possiblity of a large increase in mortgage rates, this can be accomplished with an appropriate "deductible".

The borrower can then pay an insurance premium which is commensurate with his desire to insure (only) against a particularly adverse outcome.

2. Liberalization of Prepayment Options

If a borrower took out a 5-year mortgage which had very liberal prepayment options, then he could - in effect - insure himself against the possiblity of being locked into a temporarily high mortgage rate. There are two major problems with the suggestion that the C.M.H.C. seek to promote the inclusion of more liberal prepayment provisions. First and foremost, the mortgage lender would require appropriate compensation in the form of a higher 5-year rate for these prepayment provisions, which are anaytically equivalent to selling a call option to the mortgage borrower. (As noted previously, there is evidence that mortgage lenders may feel that they have underpriced this option in the past.) Secondly, this proposal does not address what may be the prime concern of borrowers at the present time, which is that mortgage rates may at some point rise sharply from their present levels.

Appendix A

PESANDO-TURNBULL "SIMPLE" SOLUTION FOR PROVIDING MORTGAGE RATE INSURANCE

I. BASIC PROPOSAL

1. C.M.H.C. issues bonds which are extendable at the C.M.H.C.'s option, and uses the proceeds - together with the insurance premiums - to purchase otherwise identical bonds without the extendable option.

2. In providing mortgage rate insurance, the C.M.H.C. effectively sells a put option. By issuing these extendable bonds and purchasing non-extendable bonds, the C.M.H.C. buys an identical put option.

3. The insurance premium, per dollar of the insured mortgage principle, is equal to the spread between the interest rate on the extendable and the interest rate on the non-extendable bonds.

4. C.M.H.C. bears no underwriting risk.

5. A "deductible", in the form of the mortgage borrower's bearing the first x percent increase in the mortgage rate, is readily incorporated and readily priced. The bonds are extendable at their initial rate plus x percent, and the spread between the interest rate on the extendable and the non-extendable bonds continues to be the market price of the insurance premium.

II. AN EXAMPLE

1. C.M.H.C. provides mortgage rate insurance on a 5-year mortgage, with the mortgage borrower bearing the first 2% rise in mortgage rates.

2. C.M.H.C. issues 5-year bonds, extendable at the C.M.H.C.'s option for an additional 5 years at their old interest rate plus 2%.

3. Suppose the market prices otherwise identical 5-year bonds to yield 12%, but requires a yield of 13¼% on the 5-year extendable bonds.

4. The C.M.H.C. sets the insurance premium at the market-determined rate of 1¼% per year for each dollar of the insured principle.

5. Other than administrative costs (including underwriting costs), there is no cost to the C.M.H.C. The C.M.H.C. earns 12% (from the non-extendable bonds) plus 1¼% (from the insurance premiums), which allows it to meet the 13¼% interest cost of its extendable bonds.

6. If interest rates rise, the mortgage borrowers exercise their option, and so does the C.M.H.C. If interest rates decline, both options expire worthless. The C.M.H.C. is perfectly hedged and bears no underwriting risk.

III. ADVANTAGES OF PESANDO-TURNBULL PROPOSAL

1. There is no underwriting risk to the C.M.H.C.

2. The insurance premium is a market-determined price.

3. There is no need for the C.M.H.C. to estimate the insurance premium based on an options pricing model. (The put option must, of course, be priced. This pricing is done by the capital market.)

4. There is no need to calculate a time-dependent hedge ratio and seek continuously to maintain it.

5. There is no need for transactions in the futures/options markets for U.S. interest rates and the Canadian dollar.

6. The only innovation lies in the introduction of bonds which are extendable at the option of the borrower, not the lender. Extendable bonds <u>have</u> been issued in the Canadian capital market already, and this option has therefore already been (implicitly) priced by market participants.

7. The inclusion of "deductibles" is quite straightforward, and provides a means whereby the insurance premiums can be kept beneath any target level.